seen in etymologies, but also in bizarre analogies as of existence to a tricycle, are salient faults of the book. But Dr. Nicati's obsession by what may be called the fallacy of the graphic formula is its dominant characteristic. In the logical calculus "it is atrociously done," has its adverb expressed by the radical sign; the anti-Dreyfusard admits fluxional considerations. In *l'energétique*, life is formulated by Cae decorated with arrows, because it arises in the decomposition of matter which has cohesion and other qualities. Pictures on p. 250 are quite exciting.

This sort of inanity throughout makes the writer's charge upon Kant, that he lacks logic in speaking of "empty space," and his attack upon evolution, with a view to substitute "a theory simply evolutionarist," quite devoid of weight. The index is quite excellent.

H. W. B.

Kleiner Leitfaden der Practischen Physik. Dr. F. Kohlrausch. Pp. xix + 260. (Leipzig: Teubner, 1900.)

EVERY physicist is familiar with Dr. Kohlrausch's "Text-book of Physical Measurements," either in the original or in its English translation. It is not too much to say that it was the foundation of the numerous text-books of practical physics which have since appeared. Owing to the successive additions that have been made, Dr. Kohlrausch feels that it has lost its original character, and now fails to be suitable, as formerly, to the needs of a beginner. This feeling has induced him to prepare the present "Kleiner Leitfaden" by selecting from and otherwise modifying the larger volume.

In what sense can this new volume be regarded as a book for beginners? One of the most difficult questions for a teacher to solve is: How far ought a student be left to work out his own salvation? No answer can be given which would be applicable to all students. A youth of keen intelligence only requires outline directions: the details he learns best by finding them out for himself. But such men are exceptions in any laboratory. The more ordinary student will miss a point unless it is explicitly brought before his notice. We think it is to the former class that this book will be most useful. Dr. Kohlrausch has certainly not erred on the side of superabundance of instruction. We think, for example, that it might be found better fitted as a general laboratory manual if a larger number of fully worked out numerical examples were supplied. But as for ourselves, we have only admiration for the dignified restraint which is everywhere displayed. This is no cram-book intended to meet the temporary requirements of an examining board; but it is what the author has aimed to make it—an aid to general culture.

Further, the volume is well and accurately printed. We have read it through, and only detect one small error. The G Fraunhofer line is, in the diagram on p. 133, apparently identified with the third line in the hydrogen spectrum; the difference between them would only be about a millimetre in the diagram; but it is a difference which ought to be exaggerated rather than diminished, in order to prevent a student running away with a wrong idea.

A. W. P.

Elementary Algebra. By C. H. French and G. Osborn. Pp. vii + 349. (London: J. and A. Churchill, 1899.)

THIS book has been purposely written to help elementary students who have to do much of their study privately, and with this aim in view the authors have avoided as far as possible all technical terms in the explanation of the various theorems. It is possible that there may be a tendency to leave too little for the student to think out for himself by this procedure, but that is matter for individual opinion. Apart from this, the treatise is excellent in its numerous selections of examples and for the clear arrangement of the various sections.

Magnetism and Electricity for Beginners. By H. E. Hadley. Pp. viii + 327. (London: Macmillan and Co., Ltd., 1899.)

THIS little manual is written specially to meet the requirements of students preparing for the annual examination of the Science and Art Department, and consequently it follows to a considerable extent the lines of the syllabus provided. In many details, however, it very ably satisfies the desirability of providing fuller treatment, while a conspicuous and commendable feature is the insertion of many original diagrams and photographs of actual experimental apparatus.

The general arrangement is to give certain facts or definitions, followed by one or more experiments to be performed for their complete verification, so that in this respect the book may serve very well as an introduction to the electrical side of practical physics.

The apparatus described is almost entirely simple enough for the average reader to make readily, and the very generous number of illustrations (197) will be very helpful to the clear understanding of the statements made.

Part i., on magnetism, occupies 103 pages, and all the chief phenomena are illustrated by facsimile reproductions of the fields of force as shown by iron filings or small magnetometers. The explanation of electrical screening is very simply and clearly stated; in fact, the text is brought up to date as far as is possible in an elementary manual.

Part ii., statical electricity (106 pages), is specially noticeable for the way in which the usual difficulty of dealing with potential is met by geometrical interpretations; potential-diagrams being given for fields of force, electroscopes, condensers, electrical machines and contact electricity.

Part iii., voltaic electricity (93 pages), is somewhat terse in style, probably necessarily owing to the number of matters in this part of the subject which need description, but the fundamental points in all the sections are well brought forward. The book is certainly an excellent one for elementary students, and is also likely to form a sound basis on which a teacher may frame his course of lessons.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Racial Aspect of Voluntary Enlistment.

THERE is one aspect of our voluntary enlistment system which has never been touched upon so far as I know. It is that by our method the most brave and warlike men of each generation are exposed to far more than the ordinary risks of life, and generally at an age when they have left no descendants. A process of selection has, therefore, been going on in the nation for centuries by which, in the long run, the non-fighters, such as commercial classes, luxurious people, and any cowards, have more descendants proportionally than the brave and warlike. So that the average opinion is growing more and more unwarlike, less brave, and more inclined for peace at any price. The above selection is brought home to us if we consider that of those soldiers killed during the last few weeks how few have left two descendants. I foresee two remedies for this state of things, but will not ask for any more of your valuable space.

R. C. T. EVANS.

9 Heathcote Street, Gray's Inn Road, W.C.

The Wind during Eclipses of the Sun.

I WOULD like to draw attention to the importance of observations of the wind in and near the path of a total eclipse of the sun.

At the Indian eclipse of 1898 I employed at Sahdol, in

Central India, a simple arrangement for observing the strength and direction of the wind. On the morning of the eclipse, as on previous days, the wind was blowing strongly from the north-north-east with frequent gusts of greater force. As totality approached it diminished in strength and became a steady draught of air almost imperceptible to the senses. At the same time it shifted a little to the east. Before the moon had quite left the sun's disk it was again blowing in the same manner as at the beginning of the eclipse. Subsequently, as the sun approached the horizon, the wind diminished and blew with exactly the same force, direction, and uniform character as during totality.

Apparently the normal wind in the daytime at Sahdol contained two elements, one due to the distribution of pressure over Central and Southern Asia and the Indian Ocean, the other the result of comparatively local causes. The latter was suppressed by the eclipse, and the former was represented by the steady movement of the air that remained.

The total eclipse of 1900 does not present such simple conditions, but I believe that much might be learnt from similar observations.

JOHN W. EVANS.

Royal College of Science for Ireland, Dublin,
December 16.

THE APPROACHING TOTAL ECLIPSE OF THE SUN.

THE astronomers of both Europe and America are now busy in making arrangements to observe the total eclipse of the sun which will occur on the 28th of next May. As usual, our American cousins are better off than we are, for they can observe the eclipse without going out of their own country. British astronomers will have to travel to Spain or Portugal. The eclipse path stretches from the west of New Orleans to Algiers and N. Africa on the east. The local times and conditions at certain points along this path are thus given in the "Local Particulars" published by the *Nautical Almanac* Office :—

Position W. of New Orleans.
Long. 90° 6′ W., Lat. 30° 4′ N.

	Local Mean Times.	Central Standard Mean Times	Sun's Altitude.
	d. h. m. s.	d. h. m. s.	
Eclipse begins	May 27 18 26 13	May 27 18 26 37	18°
Totality begins	,, 27 19 29 42	,, 27 19 30 6	30
Totality ends	,, 27 19 31 0	,, 27 19 31 24	30
Eclipse ends	,, 27 20 43 10	,, 27 20 43 34	46

Duration of Totality, 1m. 17·8s.

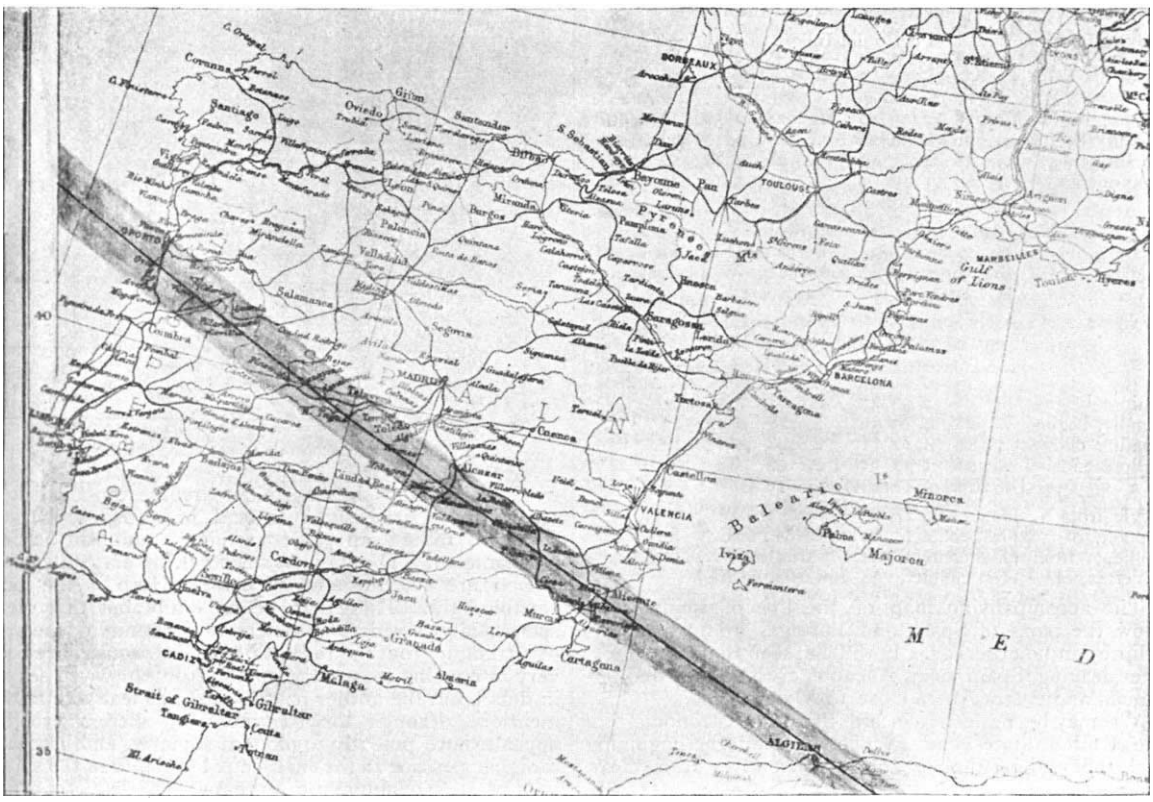
Angle, from N. point, of	first contact, 104° towards the W.	for *direct* image.
	last contact, 76° towards the E.	
Angle, from Vertex, of	first contact, 40° towards the W.	
	last contact, 145° towards the E.	

Position near Union Point, Georgia.
Long. 83° 5′ W., Lat. 33° 29′ N.

	Local Mean Times.	Central Standard Mean Times.	Sun's Altitude.
	d. h. m. s.	d. h. m. s.	
Eclipse begins	May 27 19 0 25	May 27 18 32 45	25°
Totality begins	,, 27 20 7 52	,, 27 19 40 12	39°
Totality ends	,, 27 20 9 24	,, 27 19 41 44	39°
Eclipse ends	,, 27 21 26 16	,, 27 20 58 36	55

Duration of Totality, 1m. 32·0s.

Angle, from N. point, of	first contact, 104° towards the W.	for *direct* image.
	last contact, 76° towards the E.	
Angle, from Vertex, of	first contact, 41° towards the W.	
	last contact, 139° towards the E.	



Map of the Eclipse track across Spain and Portugal, 28 May, 1900.

Position South of Cape Henry, Virginia.
Long. 76° 5′ W., Lat. 36° 42′ N.

	Local Mean Times.	Eastern Standard Mean Times.	Sun's Altitude.
	d. h. m. s.	d. h. m. s.	
Eclipse begins	May 27 19 36 35	May 27 19 40 55	33°
Totality begins	,, 27 20 48 7	,, 27 20 52 27	47°
Totality ends	,, 27 20 49 53	,, 27 20 54 13	47°
Eclipse ends	,, 27 22 11 2	,, 27 22 15 22	62°

Duration of Totality, 1m. 45·6s.